

CLAIMS

1. A tracking system for locating a vehicle and/or asset comprising:

an inertial navigation device including inertial navigation sensors mounted on the vehicle and/or asset for generating a position vector used to determine an absolute vehicle and/or asset location;

a radio transmitter connected to the navigation device for transmitting the position vector; and

a central monitoring station for receiving the position vector transmitted by the radio transmitter.

2. The tracking system according to claim 1, wherein the navigation device includes a microprocessor control module connected to first and second micro-machined accelerometers for receiving accelerations measurements along longitudinal and lateral directions of the vehicle and/or asset, and for computing the position vector.

3. The tracking system according to claim 2, wherein the microprocessor control module is connected to an electronic magnetic compass module to determine a heading direction of the vehicle and/or asset.

4. The tracking system according to claim 2, wherein the microprocessor control module is connected to a radio-goniometer to determine a heading direction of the vehicle and/or asset.

5. The tracking system according to claim 1, wherein the radio transmitter includes a wireless cellular network transceiver for establishing a cellular telecommunications link with the central monitoring station.

6. The tracking system according to claim 1, wherein the radio transmitter includes a wireless paging network transceiver for establishing a pager telecommunications link with the central monitoring station.

7. The tracking system according to claim 2, wherein the microprocessor control module is connected to a legitimate user verification module for determining if a user is authorized to move the vehicle and/or asset by means of a validation method.

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8. The tracking system according to claim 7, wherein the legitimate user verification module includes a biometrics fingerprint identification module for determining if a user is authorized to move the vehicle and/or asset.

10 9. The tracking system according to claim 7, wherein the microprocessor control module is connected to a movement detector module for detecting unauthorized movement of the vehicle and/or asset and to an engine start detector for detecting unauthorized engine starting of the vehicle.

15 10. The tracking system according to claim 2, wherein the vehicle is provided with wireless remote cut-off modules for disabling a critical component of the vehicle to prevent engine starting by an unauthorized user, and wherein the cut-off modules are controlled by a high frequency carrier signal carried by existing conductor wires of the vehicle.

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11. The tracking system according to claim 9, wherein the carrier signal has a frequency of 50 KHz to 500 KHz modulated by a rolling code signal and wherein the remote cut-off modules include a high frequency receiver demodulator for extracting data packets received from the existing conductor wires of the vehicle,
25 and a rolling code data recovery circuit and a relay for enabling and disabling the critical vehicle components.

12. A tracking method for locating a vehicle and/or asset comprising the steps of:

30 a) mounting an inertial navigation device including inertial navigation sensors on the vehicle and/or asset, the inertial navigation device generating a position vector used to determine an absolute vehicle and/or asset location;

b) transmitting the position vector by means of a radio transmitter connected to the navigation device; and

c) receiving the position vector transmitted by the radio transmitter at a central monitoring station.

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13. The tracking method according to claim 12, wherein, in step a), the navigation device includes a microprocessor control module connected to first and second micro-machined accelerometers for receiving accelerations measurements along longitudinal and lateral directions of the vehicle and/or asset, and for computing the position vector.

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14. The tracking method according to claim 13, wherein, in step a), the microprocessor control module is connected to an electronic magnetic compass module to determine a heading direction of the vehicle and/or asset.

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15. The tracking method according to claim 13, wherein, in step a), the microprocessor control module is connected to a radio-goniometer to determine a heading direction of the vehicle and/or asset.

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16. The tracking method according to claim 12, wherein, in step b), the radio transmitter includes a wireless cellular network transceiver for establishing a cellular telecommunications link with the central monitoring station.

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17. The tracking method according to claim 12, wherein, in step b), the radio transmitter includes a wireless paging network transceiver for establishing a pager telecommunications link with the central monitoring station.

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18. The tracking method according to claim 13, wherein, in step a), the microprocessor control module is connected to a legitimate user verification module for determining if a user is authorized to move the vehicle and/or asset by means of a validation method.

19. The tracking method according to claim 18, wherein, in step a), the legitimate user verification module includes a biometrics fingerprint identification module for determining if a user is authorized to move the vehicle and/or asset.

- 5 20. The tracking method according to claim 18, wherein, in step a), the microprocessor control module is connected to a movement detector module for detecting unauthorized movement of the vehicle and/or asset and to an engine start detector for detecting unauthorized engine starting of the vehicle.